

nymphs is deposited in the collections of the Laboratory for Aquatic Entomology, Florida Agricultural and Mechanical University, Tallahassee, Florida. Specimens of the eupelmid egg parasite and parasitised egg pods are deposited, together with adult grasshoppers, in the United States National Museum.

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dealing with this unusual mode of oviposition in acridoid grasshoppers.

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Daktulosphaira vitifoliae (Fitch), the Correct Name of the Grape Phylloxeran (Hemiptera: Homoptera: Phylloxeridae)

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ABSTRACT

Daktulosphaira vitifoliae (Fitch) is shown to be the correct name of the grape phylloxeran. The numerous name combinations by which the insect has been known, the synonyms, and the various spellings of its generic and specific names are listed.

An investigation was undertaken to determine the correct name of the grape phylloxeran. This action was desirable because more than one spelling of the specific name and more than one name combination are in current use for the species. The inquiry revealed that *Daktulosphaira vitifoliae* (Fitch) is the oldest available name for the species.

The grape phylloxeran, a native of North America, has been of economic importance since its accidental introduction into Europe and other viticultural centers of the world in the last century. At that time it virtually destroyed the grape industry in severely infested areas. Although the insect is no longer seriously destructive in some areas, it is injurious

in others, and its symbionts, its biology, and its control are being studied. Federov (1959) discussed the injuriousness of the phylloxeran and stressed the need for its adequate control. Shaposhnikov (1967) stated, "This is the most serious pest of grapevine." Maillet (1957) gave an extensive discussion, review, and bibliography of the species. Literature on the biology, morphology, ravages, and control of *vitifoliae* is voluminous.

The names, spellings, accreditation of author names and the earliest noted publication of names of the grape phylloxeran are as follows:

- Pemphigus Vitifoliae* Fitch 1855: 862.
Byrsocrypta? (*pemphigus*) *vitifoliae* (Fitch).—Walsh 1863: 305.

- Pemphigus vitifolia* Fitch.—Shimer 1866: 290.
- Daktulosphaira vitifoliae* (Fitch).—Shimer 1866: 365.
- Dactylosphaera? vitifoliae* (Fitch).—Shimer 1867: 2.
- Viteus vitifoliae* (Fitch).—Shimer 1867: 6.
- Rhizophis vastatrix* Planchon (in Bazille, Planchon and Sahut) 1868: 336.
- Rizaphis vastatrix* Planchon (in Bazille, Planchon and Sahut) 1868: 336.
- Phylloxera vastatrix* (Planchon) 1868: 588.
- Rhyzaphis vastatrix* (Planchon).—Signoret 1869: 580.
- Pemphigus vitis folii* (Fitch).—[Planchon and Lichtenstein] 1869: 189.
- Phylloxera vitifoliae* (Fitch).—Walsh and Riley 1869: 248.
- Pemphigus vitifolii* (Fitch).—Signoret 1869: 565.
- Peritymbia vitisana* Westwood 1869: 109.
- Phylloxera vitis folii* (Fitch).—Planchon and Lichtenstein 1871: 5.
- Rhizovaga devastatrix* Hartig 1879: 269.
- Dactylosphaera vitifolii* (Shimer).—Lichtenstein 1885: 44.
- Perytimbia vastatrix* (Planchon).—Lichtenstein 1885: 161.
- Phylloxera pemphigoides* Donnadieu 1887: 1246.
- Rhizocera vastatrix* (Planchon).—Kirk 1897: 3.
- Xerampelus vastator* (Planchon).—Del Guercio 1900: 80.
- Peritymbia vitifolii* (Fitch-Riley).—Börner 1908: 601.
- Phylloxera vitifolii* (Fitch-Riley).—Börner 1908: 609.
- Peritymbia vitifolii pervastatrix* Börner 1910: [4].
- Phylloxera (Viteus) vastator* (Planchon).—Grassi 1912: 10.
- Phylloxera (Viteus) vastatrix* (Planchon).—Grassi 1912: 10.
- Peritymbia vitisfoliae* (Fitch).—Grassi 1912: 10.
- Peritymbia vitifolii* (Fitch).—Grassi 1912: 10.
- Peritymbia vitisfolii* (Fitch).—Grassi 1912: 10.
- Viteus vitisfolii* (Fitch).—Grassi 1912: 10.
- Phylloxera (Peritymbia) pervastatrix* Börner 1914: 219.
- Peritymbia (Phylloxera) vitifolii pervastatrix* Börner 1914: 59.
- Daktulosphaira (Pemphigus) vitifoliae* (Fitch).—Börner 1930: 159.
- Pemphigus (Viteus) vitifoliae* (Shimer).—Börner and Schilder 1932: 698.
- Viteus vitifolii* (Fitch).—Börner 1952: 212.
- Viteus vitifolii vulpinae* Börner 1952: 213.
- Dactylosphaera (Peritimbria) vitifolii* (Fitch).—Ambrus 1959: 526.

Although *vastatrix* was used extensively for several years after publication, it as well as the other specific names listed above have long been recognized as synonyms of *vitifoliae*.

Fitch (1855: 862, 1855: 158, 1857: 397) invariably called the insect whose galls he observed on grape leaves in New York State “the grape leaf louse (*Pemphigus Vitifoliae*).” Signoret (1869: 556, 565) spelled the name *vitifolii*. Planchon and Lichtenstein (1871: 5) stated that *vitifoliae* was incorrect and should be rectified to *vitis folii*. Riley (1871: 95) rejected their opinion, stating “. . . though “*folii*” would of course be more grammatically correct, one would suppose the Doctor [Fitch] had some reason for his conduct.” Thomas (1879: 158) also indicated that the spelling should be *vitis-folii* or *vitifolii*, but he approved *vitifoliae*, and wrote “. . . names with the termination have been too long received for this to be a valid objection in this case.” Grassi (1912: 10) suggested *vitisfoliae* as well as *vitisfolii* and *vitifolii*. All spellings except *vitisfoliae* have been used, with Europeans tending to use *vitifolii* and Americans usually using *vitifoliae*.

Article 32(a)(ii) of the International Code of Zoological Nomenclature states “. . . incorrect transliteration, improper latinization, and use of an inappropriate connecting vowel are not to be considered inadvertent errors. . .”

Thus according to the Code, *vitifoliae* is the legal spelling of the name.

The generic name with which *viti-foliae* has been combined has varied. Fitch (1855, 1857) always, and Walsh (1863) originally, placed *vitifoliae* in aphid genera. Later Walsh (1866: 111, 1867: 284) indicated that Fitch erred in considering the insect an aphid, did not mention his own 1863 assignment, and stated (1867: 284) that the insect was “. . . a true bark-louse belonging to the *Coccus* family” and that it “. . . must become the type of a new and very aberrant genus.”

Shimer (1866: 290) studied “*Pemphigus vitifolia*” stating, “The result of these investigations develops a new genus, of a new family, in the third division *Monomera* of the *Homoptera*, for this and another insect (also one of Mr. Walsh’s coccus) found in a small subglobular gall on the leaf of the Pignut Hickory; and probably, some two or three other insects that I have seen. These may possibly comprehend more than one genus when more thoroughly studied.”

Shimer (1866: 290) then described but did not name the genus, indicated that *vitifoliae* and possibly another species belonged in it, and stated, “The insect inhabiting the small gall on the Pignut Hickory (*Caoja*[!] *glabra*) and which doubtless is identical with that referred to by Mr. Walsh, P.E., 111, although the galls are mostly all larger than a “cabbage seed,” I believed after careful examination of the female and larva to belong to the same genus as the “grape leaf louse,” and suggested for it the species name of *globosum*.”

The reference to Walsh and the size of the gall were the only statements that could be construed as a description of *globosum*. Walsh (1866: 111–112) described the gall referred to by Shimer as “. . . an undescribed gall the size of a cabbage-seed on the leaves of the Pignut Hickory (*Carya glabra*).” This presumably meets the requirements of Article 16(a) (viii) of the Code as an

indication of a specific name, but it does not meet the requirements of Article 11(g) (ii) because *globosum* was not combined with a generic name.

Shimer (1866: 365) referred to his earlier (1866: 290) article, named and briefly described the new genus *Daktulosphaera* and placed a single species, *Pemphigus vitifoliae* Fitch, in it but (p. 365) did not mention *globosum*. And he did not give the derivation of his new generic name which is, according to Steyskal (1974), a literal translation of the Greek.

The following year Shimer (1867: 2) described “*Dactylosphaera*. New genus” and gave the Greek from which the name was derived. This spelling, also according to Steyskal (1974), is a classical Latin transcription of the name. Shimer (1867: 2–11) also described “*Dactylosphaera globosum*, n. sp.” placing that species before *vitifoliae* which he assigned to *Dactylosphaera* with a question. His only mention of his former articles was to state that in 1866 he had called *vitifoliae* the “Grape leaf louse.” He (1867: 5–8) redescribed *vitifoliae* and stated “In case, however, the characters given above should be sufficient to separate, generically, *vitifoliae* from *D. globosum*, I would propose the generic name of *Viteus* for the former.”

Walsh (1867: 24–28) immediately accepted *Dactylosphaera vitifoliae* as the correct name for the grape leaf louse, while Riley (1871: 84) used *Phylloxera vitifoliae*, the name that was used much more frequently than *Daktulosphaera vitifoliae* or *Dactylosphaera vitifoliae* for many years.

Because Shimer’s original descriptions of *globosum* and *Daktulosphaera* were published in a farm journal of uncertain distribution, and because the articles were not cited in his 1867 publication where he described *globosum* and *Dactylosphaera* as new, the 1866 articles presumably were overlooked or ignored by some workers while others apparently assumed that *Dactylosphaera* was a correction of *Daktulosphaera* and that the

name should date from 1867. Later Shimer (1869: 386–398) described or redescribed several phylloxeran species that lived in galls on hickories, placing them in *Dactylosphaera*. He (p. 392–393) again mentioned *D. globosum* as a species living on hickories but did not use the name *vitifoliae*.

Pergande (1904: 236b–238) treated *globosum* as *Phylloxera globosum*, citing Shimer's 1867 publication. Although Pergande did not discuss the status of *Dactylosphaera*, he presumably considered the name a synonym of *Phylloxera*, because he placed in the latter genus the various species included in *Dactylosphaera* by Shimer in 1869. Pergande (p. 213) mentioned *vitifoliae* only in a quotation from Shimer 1867 and did not refer to Shimer's 1866 articles.

Wilson (1910: 150, 155) listed *Dactylosphaera* Shimer 1867 with *globosum* the type, *Daktulosphaira* Shimer 1866 with *vitifoliae* the type, and *Viteus* Shimer 1867 also with *vitifoliae* the type. Börner (1930: 159, 162, 193) synonymized *Viteus* with *Daktulosphaira*, but later (1952: 212, 227) recognized as valid genera, *Dactylosphaera* with *globosum* as its type-species and *Viteus* with *vitifoliae* as its type-species, stating that *Daktulosphaira* (1866) with *vitifoliae* as its type was an error for *Dactylosphaera* (1867).

Prior to 1952, both while and after synonymous names were in use, *Phylloxera vitifoliae* was the most commonly used name for the species. *Dactylosphaera vitifoliae* appeared occasionally, and *Daktulosphaira vitifoliae* and *Viteus vitifoliae* were rarely cited. Since 1952 non-Americans have tended to use *Dactylosphaera vitifoliae* (or *vitifolii*) or *Viteus vitifoliae* (or *vitifolii*) while Americans, without critical consideration of the insect's name or relationships, have continued the use of *Phylloxera vitifoliae*.

Daktulosphaira falls under Article 32(a)(ii) of the Code because, in the original publication, there is no "clear evidence of an inadvertent error, such as a lapsus calami, or a copyist's or

printer's error" and "(incorrect transliteration, improper latinization. . . . are not to be considered inadvertent errors)." Since *vitifoliae* was the only species included in the genus, *Daktulosphaira vitifoliae* (Fitch) is the correct name for the grape phylloxeran, and *Viteus* is a synonym of the older generic name. Because there has not been unanimous use of one name in recent years, common usage would not be seriously disrupted by using *Daktulosphaira vitifoliae*, the name that merits general acceptance.

The identity of *globosa* is uncertain. Types of the species are not known to exist, and morphological characteristics of the insects have not been adequately diagnosed. Recognition of the species has depended primarily on the appearance of its galls which Shimer (1869: 392–393) indicated he believed he had confused with galls of *Dactylosphaera caryaesemen* Walsh in his 1867 description of *globosum*. Pergande (1904: 213, 237) affirmed this opinion and redescribed and illustrated the galls of the two species. Shimer (1869: 393) also indicated that the trees on which he observed *globosum* and *caryaesemen* in 1867 were *Carya amara* instead of *Carya glabra* as he had previously reported. Pergande (1904: 213) noted galls of *caryaesemen* on *Carya glabra* in the Mississippi River Valley but did not state whether galls of *globosum* were present. I believe there may be some uncertainty concerning the true host(s) of *globosa*.

Perhaps it would be possible to collect galls and specimens of *globosa* and, after critical field and laboratory studies, determine the identity of the species. But until such studies are made, the status of *globosa* and *Dactylosphaera* will remain unclear.

Daktulosphaira vitifoliae differs morphologically and biologically from *Phylloxera quercus* Boyer de Fonscolombe (1834: 223–224), the type-species of *Phylloxera* Boyer de Fonscolombe (1834: 222), and the two are not congeneric. *D. vitifoliae* lacks prominent, tuberculate dorsal and marginal proc-

esses and lives in galls on the leaves and in cavities of swellings on the roots of *Vitis*. *P. quercus* has strongly developed, elongate processes on the dorsum and margin of the body in apterae and on the head and thorax in alatae. This species lives on the lower surface of the leaves of oak and does not cause galls.

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Synonymical Notes on *Larrinae* and *Astatinae* (Hymenoptera: Sphecidae)

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ABSTRACT

The following new synonyms, new combinations, and new names are indicated: *Tachysphex projectus* Nurse, 1905, and *Tachysphex rufoniger* Bingham, 1897 = *Tachysphex pompiliformis* (Panzer), 1805; *Tachysphex mysticus* Pulawski, 1971 = *Tachysphex excelsus* Turner, 1917; *Tachysphex latissimus* Turner, 1917, and *Tachysphex pectoralis* Pulawski, 1964 = *Tachysphex erythrophorus* Dalla Torre, 1897; *Tachysphex laniger* Pulawski, 1964 = *Tachysphex gujaraticus* Nurse, 1909; *Tachysphex japonicus* Iwata, 1933 = *Tachysphex nigricolor* (Dalla Torre, 1897); *Tachysphex varihirtus* Cameron, 1903, *Tachysphex rugidorsatus* Turner, 1915, and *Tachysphex mindorensis* Williams, 1928 = *Tachysphex puncticeps* Cameron, 1903; *Tachysphex spinosus* Pulawski, 1974, nec Fox, 1893 = *Tachysphex spinulosus* Pulawski, new name; *Tachysphex brevitarsis* Kohl, 1901 = *Tachysphex bengalensis* Cameron, 1889; *Tachytes sericops* Smith, 1856, *Tachysphex depressus* (Saussure), 1867, and *Tachysphex helmsi* (Cameron), 1888 = *Tachysphex nigerrimus* (Smith), 1856; *Tachysphex lilliputianus* Turner, 1917 = *Tachysphex minutus* Nurse, 1909; *Tachysphex imperfectus* de Beaumont, 1940 = *Tachysphex fulvicornis* Turner, 1918; *Tachytes ceylonicus* Cameron, 1900, and *Tachytes aurifrons* Cameron, 1900, nec Lucas, 1849 = *Tachysphex panzeri* (vander Linden), 1829; *Tachysphex ablatu*s Nurse, 1909 = *Tachysphex panzeri pulverosus* (Radoszkowski), 1886; *Tachysphex foucauldi* de Beaumont, 1952 = *Tachysphex vulneratus foucauldi* de Beaumont; *Tachysphex heliophilus* Nurse, 1909 = *Tachysphex schmiedeknechti* Kohl, 1883; *Tachysphex strigatus* Turner, 1917 = *Tachysphex subfuscatus* Turner, 1917; *Tachysphex inventus* Nurse, 1903 = *Tachysphex erythropus*



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